Dominion Energy Services, Inc.
5000 Dominion Boulevard, Glen Allen, VA 23060
DominionEnergy.com

Dominion Energy®

June 9, 2017

BY: U.S. CERTIFIED MAIL, RETURN RECEIPT REQUESTED
7015 0640 0001 0352 4956

William F. Durham
Director, Division of Air Quality
WVDEP
601 57th Street
Charleston, WV 25304

RE: **Virginia Electric and Power Company**
Gregg Knob MW Tower
Permit Determination Request

Dear Mr. Durham:

Virginia Electric and Power Company (VEPC) is submitting this request for a permit determination for the installation of a propane fired emergency auxiliary generator at our Gregg Knob Microwave Tower located near Terra Alta, Preston County, West Virginia. VEPC is the owner of the Microwave Tower, but the operator of the site is Dominion Energy Transmission, Inc. (DETI).

Based on the response from DEP dated December 3, 2015 (enclosed) for a similar unit, VEPC believes a permit is not necessary for the installation and operation of a Cummins C20 emergency auxiliary generator at the Gregg Knob Microwave Tower Site. Information on the unit is included below:

Engine Manufacturer and Model: Cummins C20 N6, QSJ2.4

Manufacturer's Rated hp: 43.5 hp

Subject to NSPS Subpart JJJJ? Yes, certified

Subject to NESHAP Subpart ZZZZ? Yes, new source, area source

Fuel Type: Propane

Potential Emissions (Based on 8,760 hours)

Pollutant	Source	lbs/hr	tons/yr
NO_X	Manufacturer	0.52	2.26
CO	Manufacturer	3.27	14.34
VOC	Manufacturer	0.06	0.28
SO_2	AP-42	1.59E-04	6.96E-04
PM/PM10/PM2.5(filterable)	AP-42	2.57E-03	0.01
PM (condensibles)	AP-42	2.68E-03	0.01
Formaldehyde	AP-42	5.54E-03	0.02
Total HAP	AP-42	0.03	0.12

The emergency auxiliary generator is not deemed to be a stationary source as stated in §45-13-2.2.24 since there are no substantive requirements and the potential emission are below permitting thresholds. 40 CFR 60 Subpart JJJJ applies to the auxiliary generator which requires VEPC to purchase an engine certified to the applicable emission standards in 40 CFR 60 Subpart JJJJ; therefore, no performance tests are required. The engine is EPA certified and by meeting Subpart JJJJ requirements, the engine also meets 40 CFR Part 63, Subpart ZZZZ requirements. VEPC will meet the requirements of Subpart JJJJ by complying with the following requirements:

- Maintaining records of maintenance conducted in accordance with the manufacturer's instructions or per the facility maintenance plan;
- Maintaining records of the hours of operation including number of hours of emergency usage with reason and number of hours of non-emergency usage; and
- Maintaining a copy of the engine certification.

If you require any additional information, please contact Rebekah Kiss at 804-273-3536 or via email at Rebekah.J.Kiss@dominionenergy.com.

Sincerely,

Amanda B. Tornabene
Director, Environmental Services (Corporate Air, Gas Infrastructure, Power Delivery)

Enclosures
Appendix A: Permit Determination for Gregg Knob MW Tower
Appendix B: Previous Review for Similar Unit

Appendix A

Permit Determination for Gregg Knob MW Tower

WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
601 57th Street, SE
Charleston, WV 25304
Phone: (304) 926-0475
www.dep.wv.gov/daq

PERMIT DETERMINATION FORM (PDF)

FOR AGENCY USE ONLY: PLANT I.D. # _____

PDF # _____ PERMIT WRITER: _____

1. NAME OF APPLICANT (AS REGISTERED WITH THE WV SECRETARY OF STATE'S OFFICE):
Virginia Electric and Power Company (VEPC)

2. NAME OF FACILITY (IF DIFFERENT FROM ABOVE):
Gregg Knob MW Tower

3. NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (**NAICS**) CODE: 237130

4A. MAILING ADDRESS:
120 Tredegar Street, Richmond, VA 23219

4B. PHYSICAL ADDRESS:
On Gregg Knob Road, Near Intersection of CR32 and CR34, Terra Alta, WV 26764

5A. DIRECTIONS TO FACILITY (PLEASE PROVIDE **MAP** AS **ATTACHMENT A**):
From the Bruceton Mills exit on I-68, travel 1.5 miles NE on Route 26 to Brandonville. Turn right onto Brandonville Pike (CR3) and travel 12.5 miles south to Scott Cramer Road. Turn left onto Scott Cramer Road (CR32) and travel 1.8 miles to the intersection of CR34 and CR32. Turn left onto Gregg Knob Road and travel 600 ft NE to the tower site on the left.

5B. NEAREST ROAD:	5C. NEAREST CITY OR TOWN:	5D. COUNTY:
Gregg Knob Road	Terra Alta, WV	Preston
5E. UTM NORTHING (KM):	**5F. UTM EASTING (KM):**	**5G. UTM ZONE:**
4374.46	626.11	17

6A. INDIVIDUAL TO CONTACT IF MORE INFORMATION IS REQUIRED: Rebekah Kiss

6B. TITLE: Environmental Consultant

6C. TELEPHONE:	6D. FAX:	6E. E-MAIL:
804-273-3536	804-273-2964	Rebekah.J.Kiss@dominionenergy.com

7A. DAQ PLANT I.D. NO. (FOR AN EXISTING FACILITY ONLY):

7B. PLEASE LIST ALL CURRENT 45CSR13, 45CSR14, 45CSR19 AND/OR TITLE V (45CSR30) PERMIT NUMBERS ASSOCIATED WITH **THIS** PROCESS (FOR AN EXISTING FACILITY ONLY):

7C. IS THIS PDF BEING SUBMITTED AS THE RESULT OF AN ENFORCEMENT ACTION? IF YES, PLEASE LIST: No

8A. TYPE OF EMISSION SOURCE (CHECK ONE):
☒ **NEW SOURCE** ☐ **ADMINISTRATIVE UPDATE**
☐ **MODIFICATION** ☐ **OTHER** (PLEASE EXPLAIN IN 11B)

8B. IF ADMINISTRATIVE UPDATE, DOES DAQ HAVE THE APPLICANT'S CONSENT TO UPDATE THE EXISTING PERMIT WITH THE INFORMATION CONTAINED HEREIN?
☐ **YES** ☐ **NO**

9. IS *DEMOLITION* OR PHYSICAL *RENOVATION* AT AN EXISTING FACILITY INVOLVED? ☒ **YES** ☐ **NO**

10A. DATE OF ANTICIPATED INSTALLATION OR CHANGE: 8/15/2017

10B. DATE OF ANTICIPATED START-UP: 8/30/2017

11A. PLEASE PROVIDE A **DETAILED PROCESS FLOW DIAGRAM** SHOWING EACH PROPOSED OR MODIFIED PROCESS EMISSION POINT AS **ATTACHMENT B**.

11B. PLEASE PROVIDE A **DETAILED PROCESS DESCRIPTION** AS **ATTACHMENT C**.

12. PLEASE PROVIDE **MATERIAL SAFETY DATA SHEETS (MSDS)** FOR ALL MATERIALS PROCESSED, USED OR PRODUCED AS **ATTACHMENT D**. FOR CHEMICAL PROCESSE, PLEASE PROVIDE A MSDS FOR EACH COMPOUND EMITTED TO AIR.

13A. **REGULATED AIR POLLUTANT EMISSIONS:**

⇒ **FOR A NEW FACILITY,** PLEASE PROVIDE PLANT WIDE EMISSIONS BASED ON THE POTENTIAL TO EMIT (PTE) FOR THE FOLLOWING AIR POLLUTANTS INCLUDING ALL PROCESSES.

⇒ **FOR AN EXISTING FACILITY,** PLEASE PROVIDE THE PROPOSED CHANGE IN EMISSIONS BASED ON THE PTE OF ALL PROCESS CHANGES FOR THE FOLLOWING AIR POLLUTANTS.

PTE FOR A GIVEN POLLUTANT IS TYPICALLY BEFORE AIR POLLUTION CONTROL DEVICES AND IS COLLECTED BASED ON THE MAXIMUM DESIGN CAPACITY OF PROCESS EQUIPMENT.

POLLUTANT	**HOURLY PTE** (LB/HR)	**YEARLY PTE** (TON/YR) (HOURLY PTE MULTIPLIED BY 8760 HR/YR) DIVIDED BY 2000 LB/TON
PM (condensible)	2.68E-03	0.01
PM/PM_{10}/PM2.5 (filterable)	2.57E-03	0.01
VOCs	0.06	0.28
CO	3.27	14.34
NO_x	0.52	2.26
SO_2	1.59E-04	6.96E-04
Pb	N/A	N/A
HAPs (AGGREGATE AMOUNT)	0.03	0.12
TAPs (INDIVIDUALLY)*		
OTHER (INDIVIDUALLY)*		

* ATTACH ADDITIONAL PAGES AS NEEDED

13B. PLEASE PROVIDE ALL **SUPPORTING CALCULATIONS** AS **ATTACHMENT E.**

CALCULATE AN HOURLY AND YEARLY PTE OF EACH PROCESS EMISSION POINT (SHOWN IN YOUR DETAILED PROCESS FLOW DIAGRAM) FOR ALL AIR POLLUTANTS LISTED ABOVE INCLUDING INDIVIDUAL HAP'S (LISTED IN SECTION 112[b] OF THE 1990 CAAA), TAP'S (LISTED IN 45CSR27), AND OTHER AIR POLLUTANTS (E.G. POLLUTANTS LISTED IN TABLE 45-13A OF 45CSR13, MINERAL ACIDS PER 45CSR7, ETC.).

14. **CERTIFICATION OF DATA**

I, SCOTT BECKETT (*TYPE NAME*) ATTEST THAT ALL THE REPRESENTATIONS CONTAINED IN THIS APPLICATION, OR APPENDED HERETO, ARE TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE BASED ON INFORMATION AND BELIEF AFTER REASONABLE INQUIRY, AND THAT I AM A ***RESPONSIBLE OFFICIAL******** (*PRESIDENT, VICE PRESIDENT, SECRETARY OR TREASURER, GENERAL PARTNER OR SOLE PROPRIETOR*) OF THE APPLICANT.

SIGNATURE OF RESPONSIBLE OFFICIAL: Scott J Beckett

TITLE: AUTHORIZED REPRESENTATIVE DATE: 06 / 07 / 2017

****** THE DEFINITION OF THE PHRASE '***RESPONSIBLE OFFICIAL***' CAN BE FOUND AT 45CSR13, SECTION 2.23.

NOTE: PLEASE CHECK ENCLOSED ATTACHMENTS:

☒ **ATTACHMENT A** ☒ **ATTACHMENT B** ☒ **ATTACHMENT C** ☐ **ATTACHMENT D** ☒ **ATTACHMENT E**

RECORDS ON ALL CHANGES ARE REQUIRED TO BE KEPT AND MAINTAINED ON-SITE FOR TWO (2) YEARS.

THE PERMIT DETERMINATION FORM WITH THE INSTRUCTIONS CAN BE FOUND ON DAQ'S PERMITTING SECTION WEB SITE:

www.dep.wv.gov/daq

ATTACHMENT 1

VIRGINIA ELECTRIC AND POWER COMPANY

Transcript From Records Effective June 1, 2015

I hereby delegate to Scott J. Beckett (the "Authorized Representative") the authority to enter into, execute, acknowledge, deliver and accept, in the name and on behalf of the companies listed below (the "Companies"), any and all real estate contracts, agreements, instruments, leases, waivers, consents and other related documents that may be necessary, expedient in, or incidental to the Companies' business, with such authority to specifically exclude the sale of real estate property.

The Authorized Representative shall observe all limitations on the authority delegated as established from time to time by the Companies' approval policies. This delegation of authority shall be effective as of the date of electronic acceptance hereof and limited to $500,000 per transaction. Any acts consistent with this delegation prior to the effective date are hereby ratified and confirmed. This delegation shall not restrict or limit my authority, and may be revoked at any time by written instrument or electronic transmission. Unless earlier revoked, this delegation shall terminate upon the termination of the Authorized Representative's employment with the Companies.

Companies:
Dominion Field Services, Inc.
Dominion Gas Projects Company, LLC
Dominion Nuclear Connecticut, Inc.
Dominion Oklahoma Texas Exploration & Production, Inc.
Dominion Person, Inc.
Dominion Resources Services, Inc.
Dominion Resources, Inc.
Dominion Retail, Inc.
Dominion Transmission, Inc.
Hope Gas, Inc.
The East Ohio Gas Company
Virginia Electric and Power Company

By: /s/ Arnold J. Jordan
Arnold J. Jordan
Vice President – Shared Services

VIRGINIA ELECTRIC AND POWER COMPANY
Secretary's Certificate

I, the undersigned, hereby certify that I am Assistant Corporate Secretary of Virginia Electric and Power Company, a Virginia public service corporation (the "Company").

I further certify that the signature and delegation of authority (Attachment 1) has not been amended or revoked with respect to the Company and that the same is now in full force and effect until revoked.

I further certify that the below named person has been duly authorized by said Company and is the incumbent of the respective office below set opposite his name, and that the signature set opposite his name is his genuine signature:

Scott J. Beckett Scott J Beckett

Authorized Representative

IN WITNESS WHEREOF, I have hereunto set my hand and have affixed the corporate seal of said Company this 10 day of May, 2017.

Karen W Doggett

Karen W. Doggett

CORPORATE
SEAL

Attachment A

Facility Location

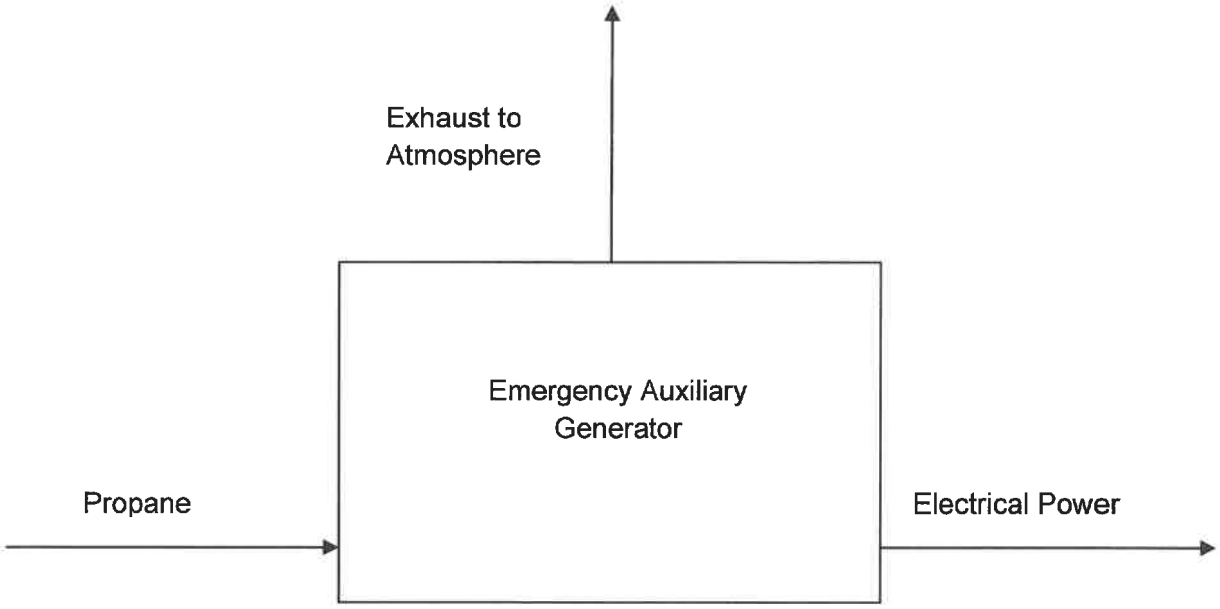

Brandonville Pike
3
Afton
Brandonville Pike to Scott Cramer Road- 39°30'42.98"N, 79°33'34.06"W
Gregg Knob - 39°30'38.37"N, 79°31'59.29"W
47
© 2016 Google
Google earth
1999
Imagery Date: 11/12/2016 39°31'01.19" N 79°32'42.52" W elev 2748 ft eye alt 24894 ft

Attachment B

Process Flow Diagram

Process Flow Diagram for the Emergency Auxiliary Generator

Gregg Knob MW Tower



Attachment C

Process Description

Process Description

Gregg Knob MW is a microwave tower used for communication. The function of the facility is to provide a connection from Dominion facilities in Richmond, Virginia, to Dominion Energy Transmission, The East Ohio Gas Company, and Hope Gas facilities in WV, PA, OH and NY by way off the Virginia Electric and Power Company microwave system. The purpose of this permit determination is for the installation of a 43.5 hp propane fired emergency auxiliary generator. The emergency generator at the facility provides back-up power in the event of power loss from the grid.

New Source Performance Standards (NSPS) Subpart JJJJ:

The propane fired Cummins C20 N6, QSJ2.4 - 43.5 hp emergency auxiliary generator is subject to this Subpart. Dominion will meet the requirements of Subpart JJJJ by complying with the following requirements:

- Maintaining records of maintenance conducted in accordance with the manufacturer's instructions or per the facility maintenance plan;
- Maintaining records of the hours of operation including number of hours of emergency usage with reason and number of hours of non-emergency usage; and
- Maintaining a copy of the engine certification.

National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart ZZZZ:

The propane fired Cummins C20 N6, QSJ2.4 - 43.5 hp emergency auxiliary generator is subject to this Subpart. The engine is EPA certified and by meeting NSPS Subpart JJJJ requirements, the engine also meets NESHAP Subpart ZZZZ requirements.

West Virginia Minor Source Regulations (R13)

The installation of the Cummins C20 N6, QSJ2.4 - 43.5 hp emergency auxiliary generator does not trigger permitting as potential to emit calculations are below exemption thresholds of:

- 6 lbs/hr and 10 tons/yr, or
- 144 lbs/day, or
- 2 lbs/hr or 5 tons/yr of HAPs

In addition, the emergency auxiliary generator is not "subject to any substantive requirement of an emission control rule" (i.e. no stack testing is required) as stated above. Therefore, the emergency auxiliary generator is not deemed to be a "stationary source" and does not require permitting.

Attachment E

Supporting Calculations

Emergency Auxiliary Generator Potential Emissions
Virginia Electric and Power Company
Gregg Knob MW Tower

Date: June 2017

Input Data:	Cummins C20 N6, QSJ2.4		
Design Class:	4-stroke rich burn	(Propane)	
Engine Power:	43.5	hp	
Fuel Input:	0.27	MMBtu/hr	
Maximum Hours of Operation:	8,760	hrs/yr	
	500	hrs/yr	
Fuel Throughput:	105.1	cf/hr	(manufacturer spec sheet)
	52,550	cf/yr	(at 500 hrs/yr)
Heating Value of Propane:	2,570	Btu/cf	(average heat value for propane)

Emission Calculations

Pollutant	Emission Factor		Emissions (8760 hrs/yr)			Emissions (500 hrs/yr)		
			(lb/hr)	(lbs/day)	(tons/yr)	(lb/hr)	(lbs/day)	(tons/yr)
Criteria Pollutants								
PM (filterable)	9.50E-03	lb/MMBtu	2.57E-03	0.06	0.01	2.57E-03	0.06	6.42E-04
PM-10 (filterable)	9.50E-03	lb/MMBtu	2.57E-03	0.06	0.01	2.57E-03	0.06	6.42E-04
PM-2.5 (filterable)	9.50E-03	lb/MMBtu	2.57E-03	0.06	0.01	2.57E-03	0.06	6.42E-04
PM (condensibles)	9.91E-03	lb/MMBtu	2.68E-03	0.06	0.01	2.68E-03	0.06	6.69E-04
SO2	5.88E-04	lb/MMBtu	1.59E-04	3.81E-03	6.96E-04	1.59E-04	0.00	3.97E-05
CO	34.13	g/hp-hr	3.27	78.55	14.34	3.27	78.55	0.82
NO_x	5.38	g/hp-hr	0.52	12.38	2.26	0.52	12.38	0.13
VOC	0.670	g/hp-hr	0.06	1.54	0.28	0.06	1.54	0.02
Greenhouse Gases								
CO_2	117.0	lb/MMBtu	31.60	--	138.39	31.60	--	7.90
CH_4	2.20E-03	lb/MMBtu	0.00	--	0.00	0.00	--	0.00
N_2O	2.20E-04	lb/MMBtu	0.00	--	0.00	0.00	--	0.00
CO_2e	117.1	lb/MMBtu	31.63	--	138.54	31.63	--	7.91
Hazardous Air Pollutants								
1,1,2,2-Tetrachloroethane	2.53E-05	lb/MMBtu	6.83E-06	--	2.99E-05	6.83E-06	--	1.71E-06
1,1,2-Trichloroethane	1.53E-05	lb/MMBtu	4.13E-06	--	1.81E-05	4.13E-06	--	1.03E-06
1,1-Dichloroethane	1.13E-05	lb/MMBtu	3.05E-06	--	1.34E-05	3.05E-06	--	7.63E-07
1,2-Dichloroethane	1.13E-05	lb/MMBtu	3.05E-06	--	1.34E-05	3.05E-06	--	7.63E-07
1,2-Dichloropropane	1.30E-05	lb/MMBtu	3.51E-06	--	1.54E-05	3.51E-06	--	8.78E-07
1,3-Butadiene	6.63E-04	lb/MMBtu	1.79E-04	--	7.84E-04	1.79E-04	--	4.48E-05
1,3-Dichloropropene	1.27E-05	lb/MMBtu	3.43E-06	--	1.50E-05	3.43E-06	--	8.58E-07
Acrolein	2.63E-03	lb/MMBtu	7.10E-04	--	3.11E-03	7.10E-04	--	1.78E-04
Acetaldehyde	2.79E-03	lb/MMBtu	7.54E-04	--	3.30E-03	7.54E-04	--	1.88E-04
Benzene	1.58E-03	lb/MMBtu	4.27E-04	--	1.87E-03	4.27E-04	--	1.07E-04
Butr/isobutyraldehyde	4.86E-05	lb/MMBtu	1.31E-05	--	5.75E-05	1.31E-05	--	3.28E-06
Carbon Tetrachloride	1.77E-05	lb/MMBtu	4.78E-06	--	2.09E-05	4.78E-06	--	1.20E-06
Chlorobenzene	1.29E-05	lb/MMBtu	3.48E-06	--	1.53E-05	3.48E-06	--	8.71E-07
Chloroform	1.37E-05	lb/MMBtu	3.70E-06	--	1.62E-05	3.70E-06	--	9.25E-07
Ethane	7.04E-02	lb/MMBtu	1.90E-02	--	8.33E-02	1.90E-02	--	4.75E-03
Ethylbenzene	2.48E-05	lb/MMBtu	6.70E-06	--	2.93E-05	6.70E-06	--	1.67E-06
Ethylene Dibromide	2.13E-05	lb/MMBtu	5.75E-06	--	2.52E-05	5.75E-06	--	1.44E-06
Formaldehyde	2.05E-02	lb/MMBtu	5.54E-03	--	2.43E-02	5.54E-03	--	1.38E-03
Methanol	3.06E-03	lb/MMBtu	8.27E-04	--	3.62E-03	8.27E-04	--	2.07E-04
Methylene Chloride	4.12E-05	lb/MMBtu	1.11E-05	--	4.87E-05	1.11E-05	--	2.78E-06
Naphthalene (POM)	9.71E-05	lb/MMBtu	2.62E-05	--	1.15E-04	2.62E-05	--	6.56E-06
PAH	1.41E-04	lb/MMBtu	3.81E-05	--	1.67E-04	3.81E-05	--	9.52E-06
Styrene	1.19E-05	lb/MMBtu	3.21E-06	--	1.41E-05	3.21E-06	--	8.04E-07
Toluene	5.58E-04	lb/MMBtu	1.51E-04	--	6.60E-04	1.51E-04	--	3.77E-05
Vinyl Chloride	7.18E-06	lb/MMBtu	1.94E-06	--	8.49E-06	1.94E-06	--	4.85E-07
Xylene	1.95E-04	lb/MMBtu	5.27E-05	--	2.31E-04	5.27E-05	--	1.32E-05
TOTAL HAP:			**0.03**		**0.12**	**0.03**		**0.01**

(1) CO, NOx and VOC emission factors from Manufacturer Emission Data Sheet.
(2) All emission factors from AP-42, Section 3.2, Natural Gas-Fired Reciprocating Engines, Table 3.2-3, 7/00
(3) GHG lb/MMBtu numbers based on 40 CFR Part 98 Tables C-1 and C-2 for natural gas

For example: CO_2 = (53.06 kg CO_2/MMBtu) / (0.453592 kg/lb) = 117.0 lb/MMBtu

(4) Global Warming Potentials = 25 for CH_4 and 298 for N_2O (per 40 CFR Part 98 Table A-1 to Subpart A)

For example: CO_2e = (117.0 lb/MMBtu) + (0.0022 lb/MMBtu * 25) + (0.00022 lb/MMBtu * 298) = 117.1 lb/MMBtu

Power Generation

2017 EPA Exhaust Emission Compliance Statement

C20 N6

standby

60 Hz Spark Ignited Generator Set

Compliance Information:

The engine used in this generator set complies with U.S. EPA emission regulations under the provisions of 40 CFR Part 60, Stationary Emergency Spark-Ignited emissions limits when tested on 6 mode cycle of Part 90.

Engine Manufacturer:	Cummins Inc
EPA Certificate Number:	HCEXB02.4AAA-007
Effective Date:	12/08/2016
Date Issued:	12/08/2016
EPA Engine Family:	HCEXB02.4AAA

Engine Information:

Model: QSJ2.4

Engine Nameplate HP: Natural Gas 40, Propane 43.5

Bore: 3.41 in. (86.5 mm)

Type: 4 Cycle, In-line, 4 Cylinder

Stroke: 3.94 in. (100 mm)

Aspiration: Naturally Aspirated

Displacement: 146.46 cu. in. (2.4 liters)

Compression Ratio: 9.5:1

Emission Control Device: Electronic Air/Fuel Ratio Control and Closed-Loop Breather System

U.S. Environmental Protection Agency Stationary Emergency SI Emission Limits

Natural Gas and Propane Fuel Emission Limits	Grams per BHP-hr		Grams per kWm-hr	
	NOx + HC	CO	NOx + HC	CO
Test Results (**Natural Gas**)	5.04	39.4	6.8	52.8
Test Results (**Propane**)	6.48	51.7	8.7	69.3
EPA Emissions Limit	10.0	387.0	13.4	519.0

Note:
Tests conducted using alternate test methods, instrumentation, fuel or reference conditions can yield different results.
Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

Power Generation

Exhaust Emission Data Sheet

C20 N6

60 Hz Spark Ignited Generator Set

EPA Emissions

Engine Information:

Model:	QSJ2.4	Bore:	3.41 in. (86.5 mm)
Type:	4 Cycle, In-line, 4 Cylinder	Stroke:	3.94 in. (100 mm)
Aspiration:	Naturally aspirated	Displacement:	146.46 cu. in. (2.4 liters)
Compression Ratio:	9.5:1		
Emission Control Device:	Electronic Air/Fuel Ratio Control and Closed-Loop Breather System		

	Natural Gas	Propane
PERFORMANCE DATA	**Standby**	**Standby**
BHP @ 1800 RPM (60 Hz)	40	43.5
Fuel Consumption (SCFH)	259.6	105.1
Air to Fuel Ratio	16.5:1	14.7:1
Exhaust Gas Flow (CFM)	115.4	110.7
Exhaust Gas Temperature (°F)	1265	1300
EXHAUST EMISSION DATA		
HC (Total Unburned Hydrocarbons)*	91	478
NOx (Oxides of Nitrogen as NO_2)	1454	1470
CO (Carbon Monoxide)	8808	13258
		Values are ppmvd
HC (Total Unburned Hydrocarbons)*	0.14	0.67
NOx (Oxides of Nitrogen as NO_2)	5.70	5.38
CO (Carbon Monoxide)	24.37	34.13
		Values are Grams per HP-Hour

*HC includes all NMHC, VOC, POC, and ROC constituents (Non-Methane HC, Volatile Organic Compounds, Precursor Organic Compounds, and Reactive Organic Compounds)

TEST CONDITIONS

Data was recorded during steady-state rated engine speed (± 25 RPM) with full load (±2%). Pressures, temperatures, and emission rates were stabilized.

Fuel Specification:	
Natural Gas:	Dry gas as received from Supplier (1000 BTU/SCF).
Propane:	Meets the requirements for Commercial Grade Propane under the ASTM D1835 Standard Specification for Liquefied Gases
Fuel Temperature	60 ± 9 °F at Flow Transmitter
Fuel Pressure	14.73PSIA ± 0.5 PSIA at Flow Transmitter
Intake Air Temperature:	77 ± 9 °F at inlet
Barometric Pressure:	29.92 in. Hg ± 1 in. Hg
Humidity:	NOx measurement corrected to 75 grains H_2O/lb dry air

The NOx, HC, and CO emission data tabulated here were from a single engine under the test conditions shown above. These data are subjected to instrumentation and engine-to-engine variability. Field emission test data are not guaranteed to these levels. Actual field test results may vary due to test site conditions, installation, fuel specification, test procedures and instrumentation. Engine operation with excessive air intake or exhaust restriction beyond published maximum limit, or with improper maintenance, may results in elevated emission levels.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2017 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: Cummins Inc.
(U.S. Manufacturer or Importer)

Certificate Number: HCEXB02.4AAA-007

Effective Date: 12/08/2016

Expiration Date: 12/31/2017

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 12/08/2016

Revision Date: N/A

Manufacturer: Cummins Inc.
Engine Family: HCEXB02.4AAA
Mobile/Stationary Certification Type: Stationary
Fuel : LPG/Propane
Natural Gas (CNG/LNG)
Emission Standards :
Part 90 Phase 1
CO (g/kW-hr) : 519
HC + NOx (g/kW-hr) : 13.4
NMHC + NOx (g/kW-hr) : 13.4
Emergency Use Only : Y

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR Part 60, 1065, 1068, and 60 (stationary only and combined stationary and mobile) and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 60 and produced in the stated model year.

This certificate of conformity covers only those new nonroad spark-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 60 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 60. This certificate of conformity does not cover nonroad engines imported prior to the effective date of the certificate.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068.20 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 60. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 60.

This certificate does not cover large nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

Appendix B

Previous Review for Similar Unit

west virginia department of environmental protection

Division of Air Quality
601 57th Street, S.E.
Charleston, WV 25304

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

December 3, 2015

Brian Sheppard
Vice President Pipeline Operations
Dominion Transmission, Inc.
925 White Oaks Blvd.
Bridgeport, WV 26330

Re: Permit Applicability Determination
Newberne Microwave Tower
Gilmer County, WV
Determination No. PD15-094
Plant ID No. 021-00029

Dear Mr. Sheppard:

It has been determined that a permit will not be required for your proposed installation and operation of a natural gas fired auxiliary generator at the above referenced facility. This determination is based on information included with your Permit Determination Form (PDF) received on November 5, 2015, which indicates that the increase in emissions will not exceed two (2) lbs/hr or five (5) tons/year of total Hazardous Air Pollutants (HAPs); six (6) lbs/hour and ten (10) TPY of any regulated pollutant; or, trigger a substantive requirement of any State or Federal air quality regulation.

Please bear in mind, however, that any additional changes to the proposed facility, may require a permit under 45CSR13. Furthermore, pursuant to 45CSR13-5.14, records briefly describing the proposed change, the pollutants involved, the potential to emit for each pollutant increased or added shall be maintained by the owner or operator for at least two years and made available to the Director upon request.

Should you have any questions, please contact the undersigned engineer at (304) 926-0499 Ext. 1211.

Sincerely,

William T. Rothwell II, P.E.
Engineer